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**THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	
Shin SATO	: Confirmation No. 4914
	:
U.S. Patent Application No. 10/791,829	: Group Art Unit: 1795
	:
Filed: March 4, 2004	: Examiner: Arun S Phasge
For: APPARATUS FOR ELECTRODEIONIZATION OF WATER	

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Attn: BOARD OF PATENT APPEALS AND INTERFERENCES

**APPELLANT'S REPLY BRIEF (37 CFR 1.192)**

Further to the Examiner's Answer mailed on April 29, 2008, in connection with the above-identified application on appeal, herewith is Appellant's Reply Brief.

### Argument

The rejection of claims 1-2 and 4-6 under 35 U.S.C. §102(e) as being anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over U.S. Patent No. 6,649,037 to Liang et al. ("Liang '037"), and the rejection of claim 7 under 35 U.S.C. 103(a) over Liang '037 in view of U.S. Patent No. 5,292,422 to Liang et al. ("Liang '422") are hereby traversed for the previously-presented reasons advanced in Appellant's Appeal Brief. Appellant hereby respond to selected portions of the Examiner's Answer (EA) mailed April 29, 2008.

#### Claims 1-2 and 3-6 are patentable under 35 U.S.C. §102 and 35 U.S.C. 103(a)

A rejection based on 35 U.S.C. §102 requires every element of the claim to be included in the reference, either directly or inherently. The disclosure of Liang '037 does not teach or suggest all of Appellant's claim limitations. Further, to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), not only must all claim limitations be disclosed, there must also be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings.

In the Appellant's Appeal Brief, Appellant argued that the Liang '037 does not disclose the deionized water is introduced to the concentrating compartment "at a side near the outlets for the deionized water of the desalting compartments." Appellant maintains that position. Indeed, nowhere does Liang '037 disclose any configuration of inlets or outlets that introduces deionized water from a desalting compartment to its associated concentrating compartment.

In response, the EA, in paragraph 10 of page 6, posits that Liang '037, in the embodiment depicted in Fig. 13 and described at column 11, lines 31-61, discloses this feature. The EA further posits, on page 7, that when the entire Liang '037 patent is perused, i.e., Fig. 1 in combination with Fig. 13, Liang '037 shows wherein "inlets to some compartments are adjacent to outlets of other compartments," and that the recited arrangement of concentrating compartments and desalting compartments is disclosed. Appellant respectfully disagrees.

Fig. 13 of Liang '037 appears to only disclose wherein "water flow is divided between concentrating compartment 680, depletion compartment 620 and anode compartment 650," (see column 11, lines 39-41) and purified water exits at conduit 614 from another depletion compartment in series with depletion compartment 620. Nowhere in Fig. 13 or the accompanying text does Liang '037 disclose, teach, or suggest feeding deionized water, i.e., the output of conduit 614, into the concentrating compartment 680, as recited in claim 1.

The Examiner maintains the assertion made in the final Office Action that Example 1 of Liang, starting at column 14 and illustrated in Fig. 1, discloses the claimed electrodeionization, "wherein the water from the outlet of the diluting compartment is fed to the inlet of a concentrating compartment." (see Office Action, page 2). Appellant refutes this argument, submitting that the second stage is simply connected in series such that the purified water of the first stage is introduced to both the diluting compartment and the concentrating compartment of the second stage and like the first stage nowhere is a portion of the purified water product of the second stage introduced back into the concentrating compartment of the second stage. In other words, regardless of the characteristics of the water received by the concentrator of the second stage, it still is the same water received by the second stage diluting compartment and does not include any output of the diluting compartment of the second stage. Appellant respectfully submits that an apparatus for the electrodeionization of water wherein deionized water of any stage is configured to be input back into the concentrating compartment of that stage, is neither directly or inherently disclosed by Liang '037.

Regarding the alternate rejection of claims 1-2 and 4-6 as obvious over Liang '037, Appellant respectfully submits that notwithstanding the assertions of the final Office Action and maintained in the EA, all the examples disclosed by Liang '037 fails to disclose, teach, or suggest Appellant's apparatus and methods.

The Examiner appears to improperly reconstruct an electrodeionization apparatus using hindsight reasoning to pick and choosing among different embodiments, i.e., Figs. 1 and 13. It is improper to use the claimed invention as an instruction manual to piece together the teachings of the prior art so that the claimed invention is rendered obvious.

For example, combining the apparatus of Fig. 13 with the apparatus of Fig. 1 would, if allowable at all, would only result in a first or a second stage having multiple depletion compartments and offers no suggestion wherein purified water of a desalting compartment may be fed into the concentration compartment of the same stage, which is the essence of Appellant's invention. As disclosed in Appellant's specification, at paragraph [0026], Appellant recites wherein:

[0026] By introducing product water into the concentrating compartments 15 in the single-pass counter-flow manner relative to the desalting compartments 16, the concentrated water in the concentrating compartment 15 near the outlets for product water has the lowest ion concentration, whereby the ion diffusion to the desalting compartments 16 due to the concentration diffusion is restricted, and the ions are removed at a high rate.

Appellant respectfully submits that claims 1-2 and 4-6 are patentable not only due to the failure of Liang '037 to anticipate the recited deionization apparatus, but furthermore for the failure of the Examiner to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a).

**Claim 7 is patentable under 35 U.S.C. § 103(a) over Liang '027 in view of Liang '422**

Notwithstanding any disclosure in Liang '422 of the tie rod recited in claim 7, Liang '422 fails to remedy the deficiency of Liang '037, as presented above. Specifically, Liang '422 fails to disclose, teach or suggest an arrangement of inlets and outlets configured to introduce deionized water to a concentrator module, as recited in claim 1. Therefore, the combination of Liang '037 and Liang '442 fails to disclose, teach, or suggest all of Appellant's claim limitations.

Accordingly, it is respectfully submitted that claim 7 is likewise patentable over the applied art for at least its dependence on claim 1, an allowable base claim, as well as for the additional features it recites.

**CONCLUSION**

Accordingly, for the extensive reasons advanced above and in Appellant's Appeal Brief, reversal of the rejection of claims 1-2 and 4-7 are in error.

Respectfully Submitted,

KANESAKA BERNER AND PARTNERS

By 

Manabu Kanesaka

Reg. No. 31,467

Agent for Appellant

1700 Diagonal Road, Suite 310  
Alexandria, VA 22314  
(703) 519-9785